



Dell™ PowerApp.web 100 and PowerApp.cache 100 Appliances Rack Installation Guide

This installation guide provides instructions for trained service technicians installing one or more Dell PowerApp™ 100 appliances in a rack. This guide includes procedures for the following three rack kits:

- Two-post center-mount
- Two-post flush-mount
- Four-post rack cabinet

One rack kit is required for each PowerApp 100 system to be installed in the rack.

Two-Post Center-Mount Rack Kit Installation

This procedure provides instructions for installing a Dell PowerApp 100 appliance in a two-post open-frame relay rack, such as those found in telecommunications equipment facilities. Both 3-inch and 6-inch wide two-post racks are accommodated.

The two-post open-frame relay rack must be properly secured to the floor, to the ceiling or upper wall, and where applicable, to adjacent racks, using floor and wall fasteners and bracing specified or approved by the rack manufacturer or by industry standards. Refer to the two-post open-frame relay rack manufacturer's installation documentation for precautionary warnings and information before attempting this installation.



CAUTION: Do not attempt to install the PowerApp system into a two-post open-frame relay rack that has not been securely anchored in place. Damage to the system and personal injury may result.

Refer to "Safety Instructions" at the front of this document for additional safety information regarding rack installation.

Rack Kit Contents

The rack kit includes the following items (see Figure 1):

- Two center-mount brackets
- Four 10-24 x 0.375-inch pan-head Phillips (or slotted) screws
- Two 12-24 x 0.5-inch pan-head Phillips screws

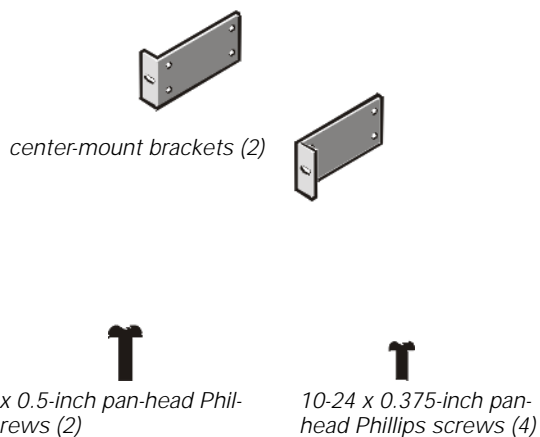


Figure 1. Two-Post Center-Mount Rack Kit Contents

Recommended Tools and Supplies

You need the following tools and supplies to install the system in a two-post open-frame relay rack:

- #2 Phillips screwdriver
- Masking tape or a felt-tip pen, for use in marking the mounting holes to be used

Marking the Rack

1. Determine where you want to place the bottom of the PowerApp 100 system.



CAUTION: If you are installing more than one PowerApp 100 system, install the first system in the lowest available position in the rack.

2. Mark the upper and lower-mounting positions on the two posts.

Each 1-U (1.75-inch) vertical space has three holes, with center-to-center spacing between holes (beginning at the center of the top hole of a 1-U space) 0.625, 0.625, and 0.5 inches (see Figure 2).

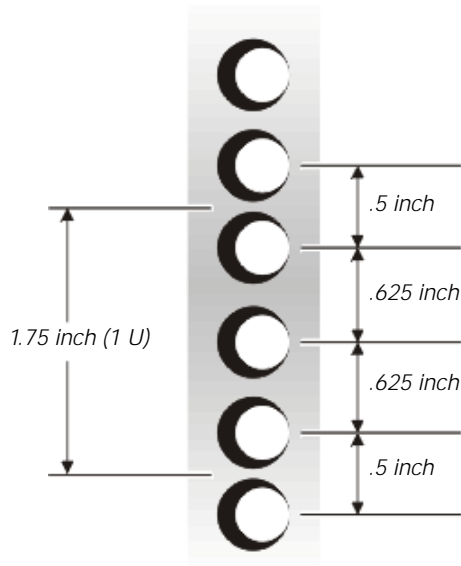


Figure 2. Two-Post Open-Frame Relay Rack 1-U Hole Spacing

Attaching the Brackets

1. Locate one of the two brackets and align it over the two threaded holes on the side of the system (see Figure 3).
2. Secure the bracket to the system chassis using two 10-24 x 0.375-inch screws (see Figure 3).

Repeat this step to install the remaining bracket on the other side of the system.

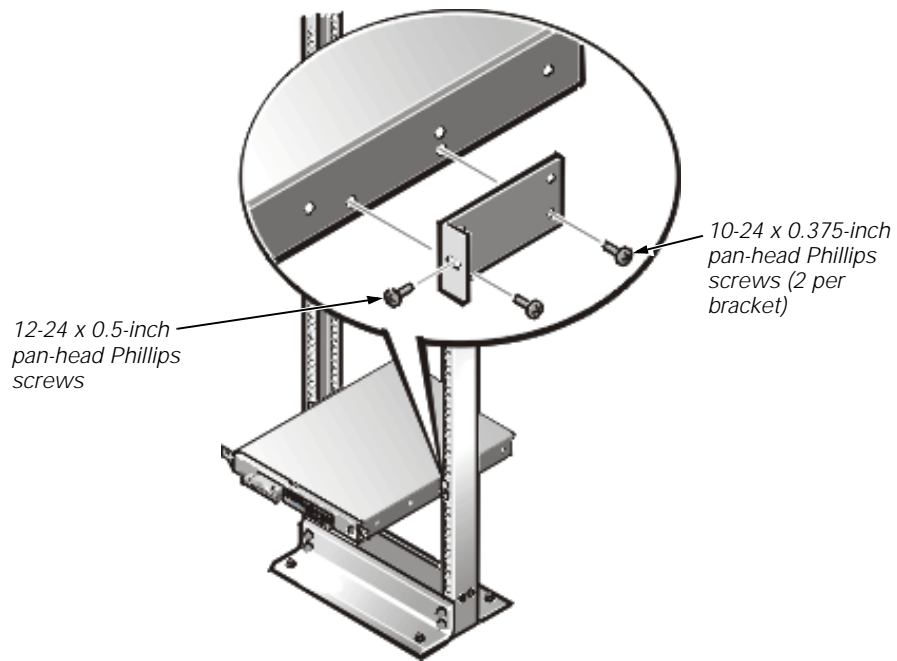


Figure 3. Securing the System in the Rack

Installing the System in the Rack



CAUTION: Due to the size and weight of the computer system, never attempt to install the computer system by yourself.

1. Lift the system into position between the two posts, with the hole in the mounting bracket aligned one hole above the mark you made in the two posts (see Figure 3).
2. Secure the system to the rack using a 12-24 x 0.5-inch screw through the mounting bracket to the front of the left and right posts (see Figure 3).
3. Attach the front bezel, if it is not already attached, to the system (see the *Troubleshooting Guide* for instructions).

This completes the two-post center-mount rack installation.

Two-Post Flush-Mount Rack Kit Installation

This procedure provides instructions for installing a Dell PowerApp 100 appliance in a two-post open-frame relay rack, such as those found in telecommunications equipment facilities. Both 3-inch and 6-inch wide 2-post racks are accommodated.

The two-post open-frame relay rack must be properly secured to the floor, to the ceiling or upper wall, and where applicable, to adjacent racks, using floor and wall

fasteners and bracing specified or approved by the rack manufacturer or by industry standards. Refer to the two-post open-frame relay rack manufacturer's installation documentation for precautionary warnings and information before attempting this installation.



CAUTION: Do not attempt to install the PowerApp system into a two-post open-frame relay rack that has not been securely anchored in place. Damage to the system and personal injury may result.

See "Safety Instructions" found earlier in this guide for additional safety information regarding rack installation.

Rack Kit Contents

The two-post flush-mount rack kit includes the following items (see Figure 4):

- Two flush-mount brackets
- Two inner mounting rails
- Four 12-24 x 0.5-inch pan-head Phillips (or slotted) screws
- Four 10-24 x 0.25-inch flat-head slotted screws for securing the inner mounting rails to the sides of the system
- One 1-U template

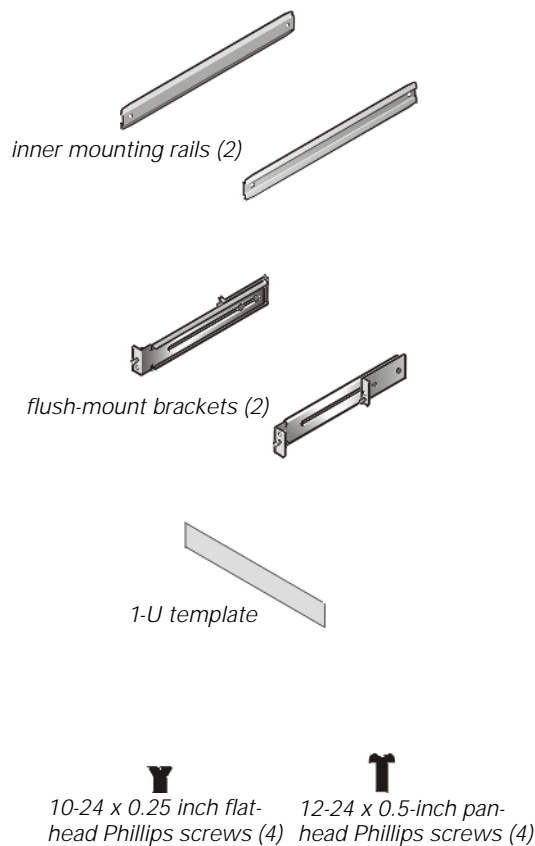


Figure 4. Two-Post Flush-Mount Rack Kit Contents

Recommended Tools and Supplies

You need the following tools and supplies to install the system in a two-post open-frame relay rack:

- #2 Phillips screwdriver
- Masking tape or a felt-tip pen, for use in marking the mounting holes to be used

Marking the Rack

1. Determine where you want to place the bottom of the PowerApp 100 system.



CAUTION: If you are installing more than one PowerApp 100 system, install the first system in the lowest available position in the rack.

2. Place the 1-U template over the front of the two-posts of the rack in the desired location.
3. Position the bottom of the template in line with the desired bottom position of the computer chassis.
4. Mark the upper and lower-mounting positions on the vertical rails as shown by the V-notches on the sides of the template.

Each 1-U (1.75-inch) vertical space has three holes, with center-to-center spacing between holes (beginning at the center of the top hole of a 1-U space) 0.625, 0.625, and 0.5 inches (see Figure 5).

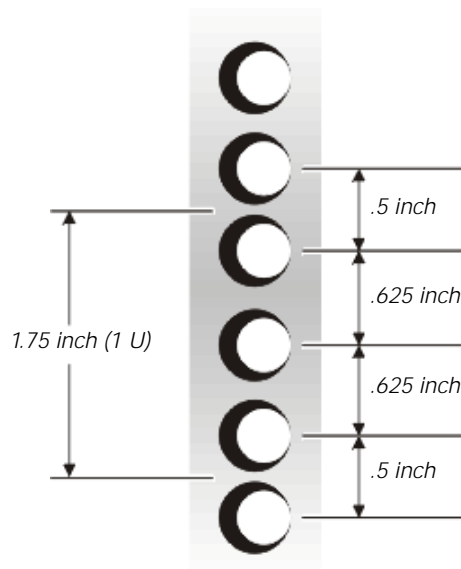


Figure 5. Two-Post Open-Frame Relay Rack 1-U Hole Spacing

Installing the Bracket in the Rack



CAUTION: The 1-U mounting bracket is designed to support a single PowerApp 100 system. Do not attempt to install any other system in this bracket. Damage to the system and personal injury may result.



CAUTION: Due to the size and weight of the PowerApp 100 system, never attempt to install the system by yourself.

1. Slide the back portion of the bracket to its widest opening and place the mounting bracket into the rack, with the bottom of the bracket at the marks you made earlier (see Figure 6).

2. Slide the back part of the bracket toward the front, with the pins entering the lower screw holes in the rack, at the marks you made earlier. Secure the bracket front and back to the rack with a 12-24 x 0.5-inch screw.

Repeat this step to install the remaining bracket on the other side of the rack.

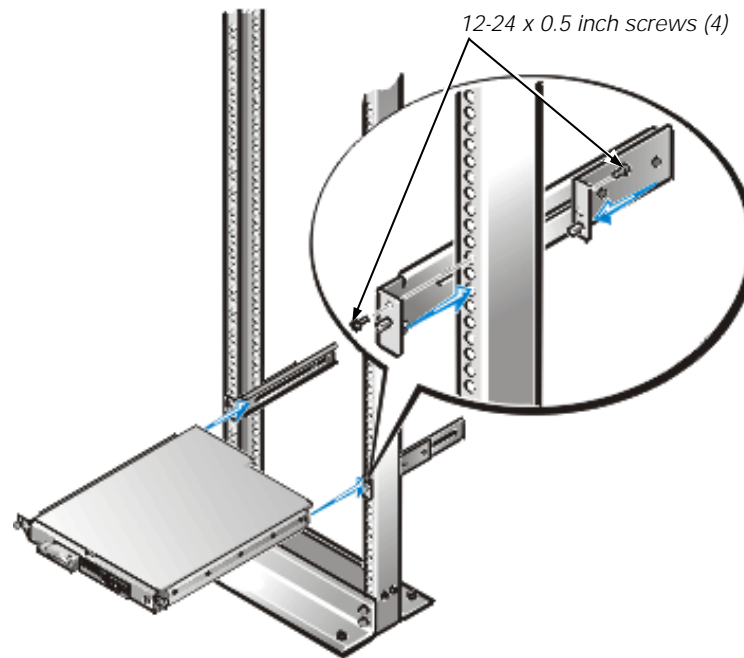


Figure 6. Installing the Bracket in the Rack

Installing the Inner Rails on the System Chassis

1. Locate the two inner rails and position one to the side of the chassis (see Figure 7).

Ensure that the flat end of the inside rail is toward the front of the chassis and that the end with two threaded holes is located at the back of the chassis. The flat central part of the inside rail must be facing the chassis, with the raised upper and lower rail surface facing outward (see Figure 7).

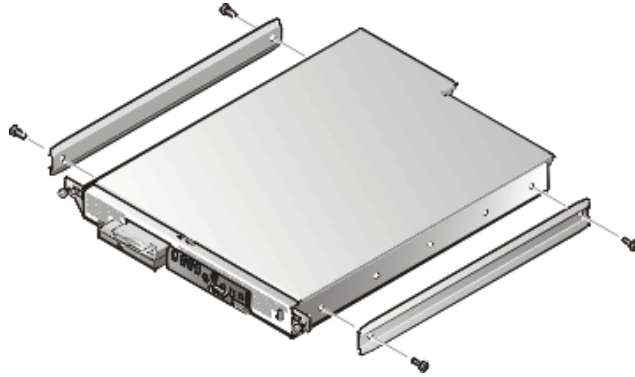


Figure 7. Securing the Inner Rails to the System Chassis

2. Secure each inner rail to the chassis using two 10-32 x 0.25-inch flat-head screws.

Installing the System in the Rack



CAUTION: Due to the size and weight of the computer system, never attempt to install the computer system by yourself.

1. Remove the optional bezel from the computer front panel. Press the tab on each end of the bezel and pull the bezel straight out from the chassis.
2. Lift the system into position in front of the installed mounting bracket.
3. Move the system back with its inside rail engaging the mounting bracket. Slide the system completely into position and secure it to the rack using the captive fasteners at the outer edge of the front panel (see Figure 8).
4. An internally threaded stud projecting from the front of the tray flanges accepts the captive fastener on the front of the system.

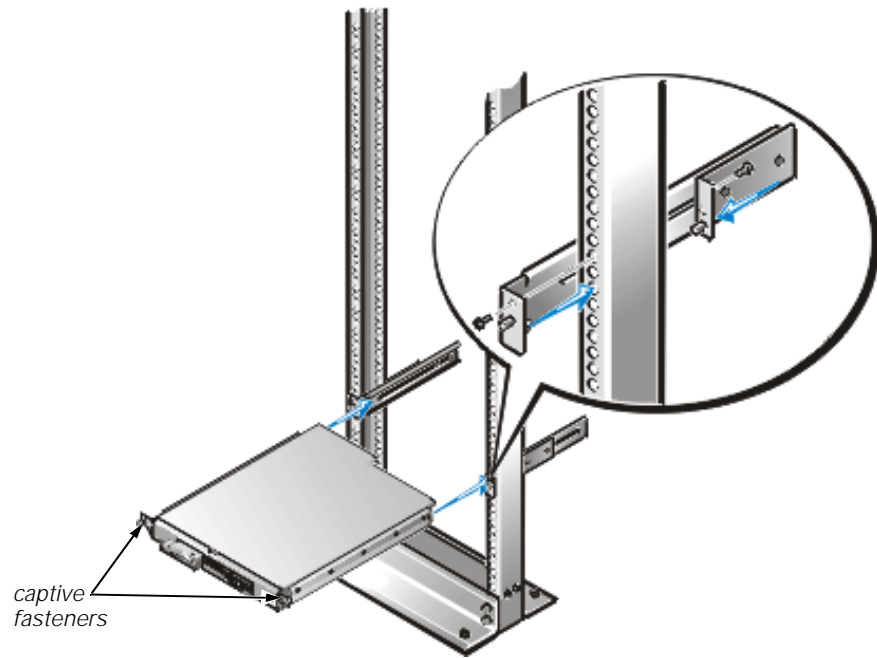


Figure 8. Securing the Computer System in the Rack

5. Attach the front bezel, if one is available, to the system (see the *Troubleshooting Guide* for instructions).

This completes the two-post flush-mount rack installation.

Four-Post Rack Kit Installation

This procedure provides instructions for installing a Dell PowerApp 100 appliance in a four-post rack cabinet. Both 24-U and 42-U height racks are accommodated.

Rack Kit Contents

The rack kit includes the following items (see Figure 9):

- One pair of slide assemblies
- One cable-management arm
- Four 10-32 x 0.5-inch pan-head Phillips screws
- Six 10-24 x 0.375-inch pan-head Phillips screws
- One 1-U template for a four-post rack



NOTE: If you purchased a Dell rack along with your PowerApp system, the slide assemblies may be preinstalled in the rack.

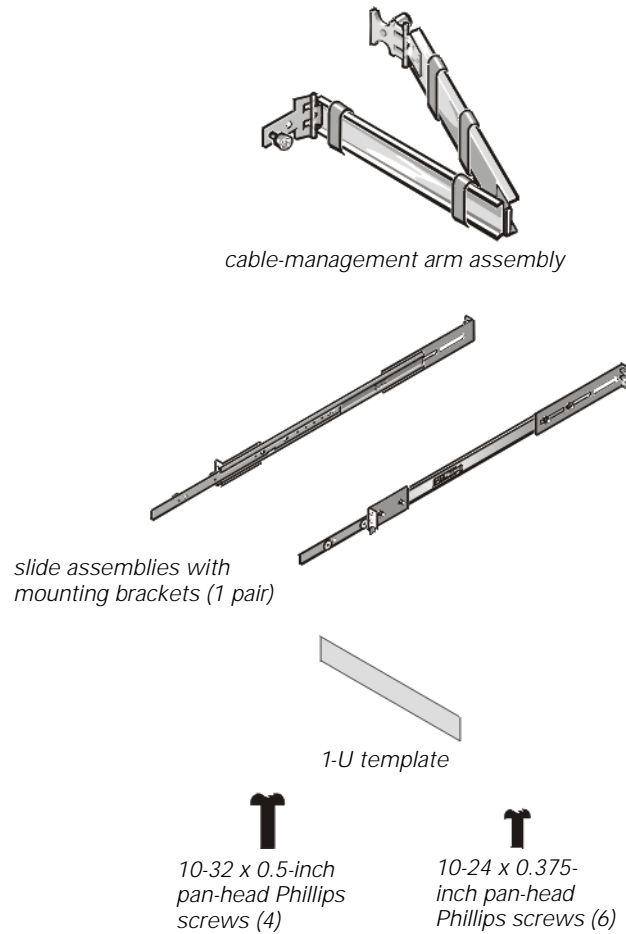


Figure 9. Four-Post Rack Kit Contents

Before You Begin

Before you begin installing your PowerApp system in the rack, carefully read "Safety Instructions," found earlier in this guide.

NOTICE: This rack kit is intended to be installed in a Dell rack by trained service technicians. If you install the kit in any other rack, be sure that the rack meets the specifications of American National Standards Institute (ANSI)/Electronic Industries Association (EIA) standard ANSI/EIA-310-D-92, International Electrotechnical Commission (IEC) 297, and Deutsche Industrie Norm (DIN) 41494. One rack kit is required for each Dell server or storage system that is installed in a rack.

Recommended Tools and Supplies

You need the following tools and supplies to install the system in a four-post rack cabinet:

- A #2 Phillips screwdriver
- A flat-blade screwdriver
- An installation template, helpful in slide assembly placement and alignment
- Masking tape or a felt-tip pen, for use in marking the mounting holes to be used

Installing the Rack Kit



NOTES: If you purchased a Dell rack along with your PowerApp system, the slide assemblies may be preinstalled in the rack.

For instructions on installing the PowerApp system itself, see "Installing the System in the Rack" found later in this guide.

To install the slide assemblies in the rack, perform the following steps:

1. Remove the rack's front and back doors.
2. Install the slide assemblies in the rack.

The subsections that follow include instructions for performing these tasks.

Removing the Doors From the 42-U Rack



CAUTION: To prevent personal injury due to the size and weight of the doors, never attempt to remove the doors by yourself.



CAUTION: Store the two doors where they will not injure someone if the doors accidentally fall over.

1. Open the latch on the front door (see Figure 10).

Slide the button cover up as far as it will go, press the push button, rotate the handle clockwise until the latch releases, and then pull the door open.

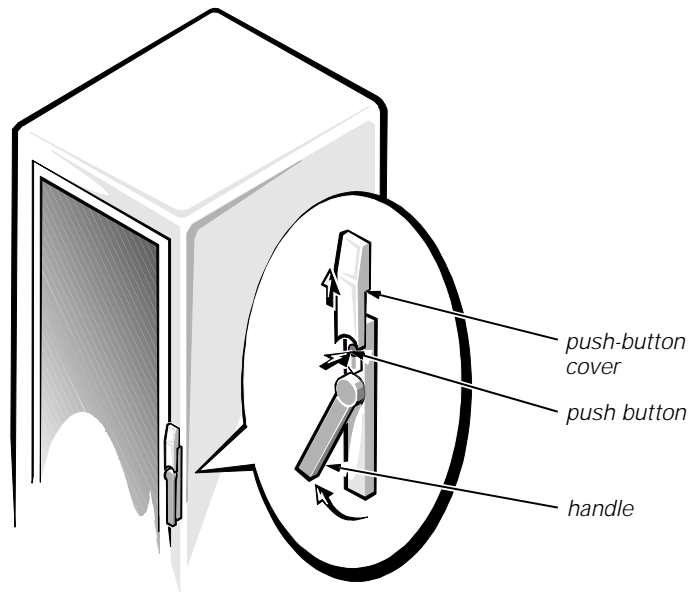


Figure 10. Opening the 42-U Rack Door

2. Remove the front door from the rack as shown in Figure 11.
 - a. One person should grasp the top of the door to stabilize it. The other person should grasp the bottom of the door.
 - b. The person holding the bottom of the door should press the hinge release lever on the bottom hinge and then pull the door away from the rack.
 - c. The person holding the top of the door should press the hinge release lever on the top hinge and then pull the door away from the rack.

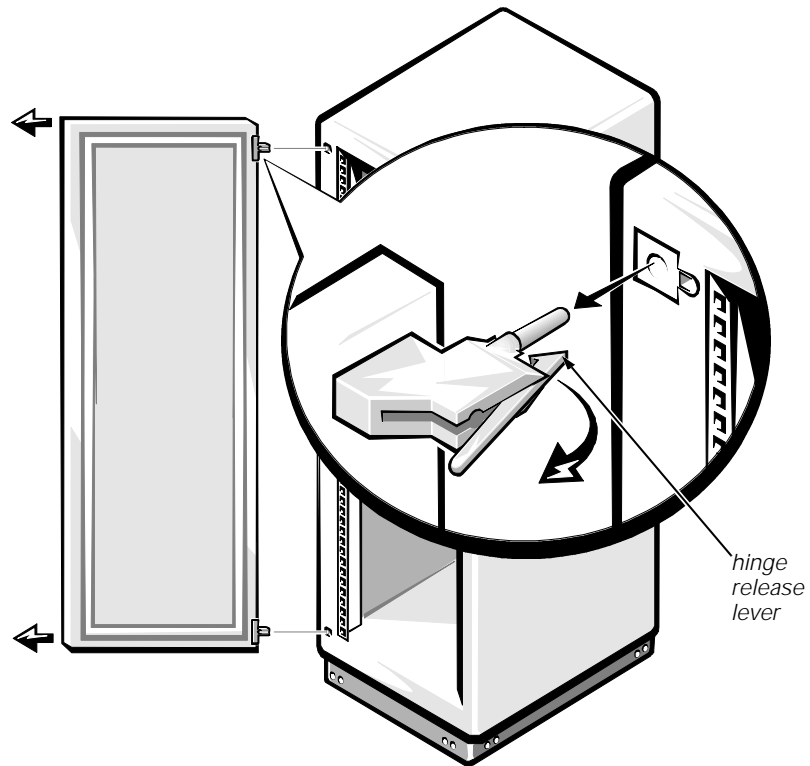


Figure 11. Removing the 42-U Rack Doors

3. Repeat steps 1 and 2 to remove the back door from the rack.

Removing the Doors From the 24-U Rack



CAUTION: To prevent personal injury due to the size and weight of the doors, never attempt to remove or replace the doors by yourself.

1. Unlock and twist the handle clockwise (see Figure 12).
2. Open the front door.

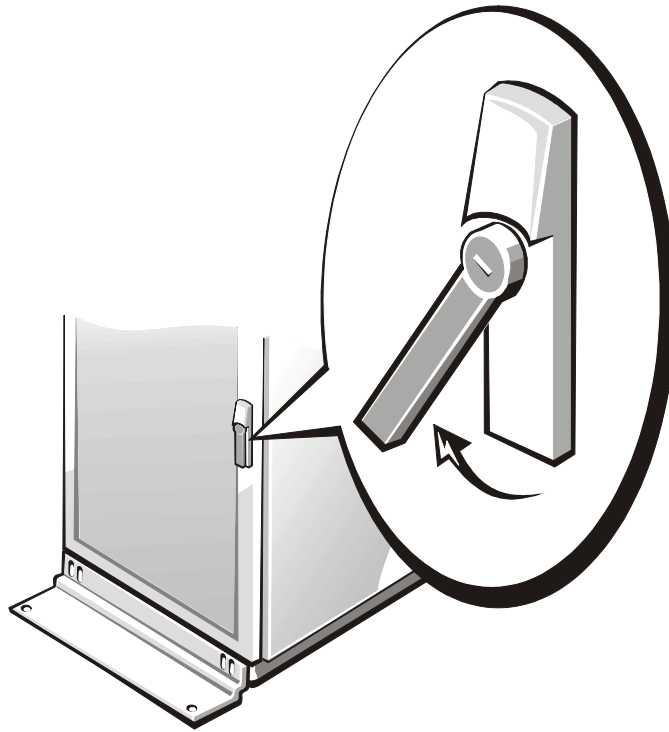


Figure 12. Unlocking the 24-U Rack Door

3. Remove the front door from the rack as shown in Figure 13.
 - a. With the door open, lift out and fully retract all hinge pins.
 - b. Once all the hinge pins have been lifted out and retracted, lift the door out.

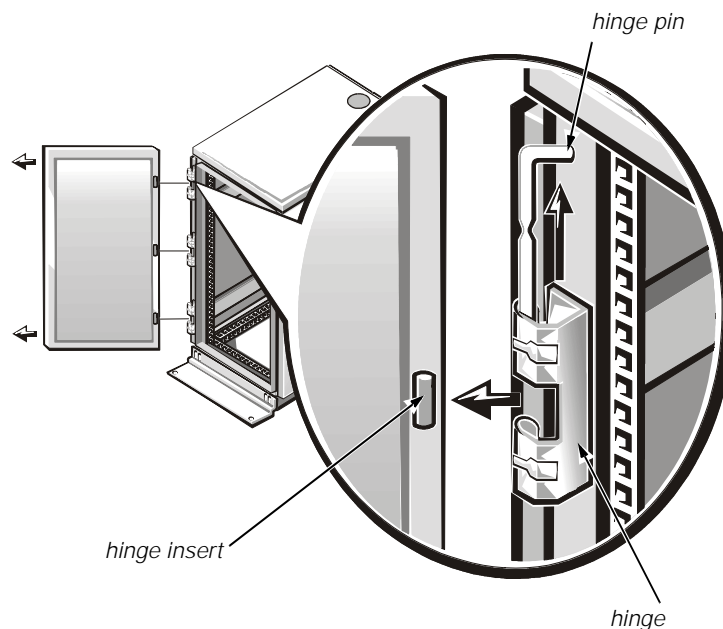


Figure 13. Removing the 24-U Rack Doors



CAUTION: Store the two doors where they will not injure someone if the doors accidentally fall over.

If you want to reverse the door so that the handle is on the other side, perform the following steps:

1. With the door open, lift out and fully retract all hinge pins.
2. Remove the hinges and door brackets from the door frame.
3. Replace the hinges and door brackets on the opposite side and switch the position of the handle.
4. Replace the rack door (see the section, “Replacing the Rack Doors,” found later in this guide).

Installing the Slide Assemblies in the Rack



NOTE: If the slide assemblies were preinstalled by Dell, you can skip this section.

You must allow 1 U (1.75 inch) of vertical space for each PowerApp 100 system you install in the rack.



NOTE: The vertical rails of the rack are marked by small indentations in 1-U increments (see Figure 14).

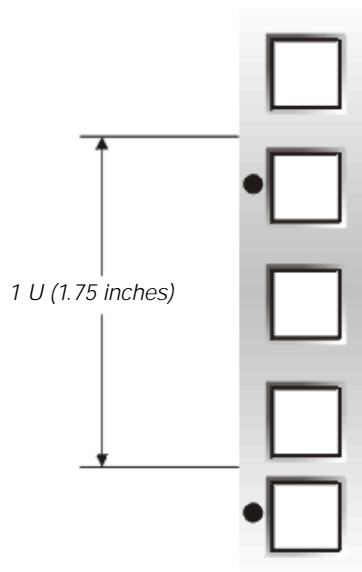


Figure 14. One Rack Unit

For more information about requirements for installing components in a rack, see the Dell Rack Advisor software available on the Dell World Wide Web site at: <http://support.dell.com>.



WARNING: If you are installing more than one computer, install the slide assemblies so that the first computer is installed in the lowest available position in the rack.

To install the slide assemblies in the rack, perform the following steps:

1. Place the front of the template on the vertical rails at the front of the rack where you want to install the system.

Ensure that the printing on the template identifies the side facing outwards as the template front.

Position the bottom of the template in line with the desired bottom position of the computer chassis.

2. Mark the rack's front vertical rails with a felt-tipped marker or place masking tape where the system's upper and lower edges will be located (see Figure 15). Make a mark or place tape on the vertical rails next to the template's V-shaped notches.

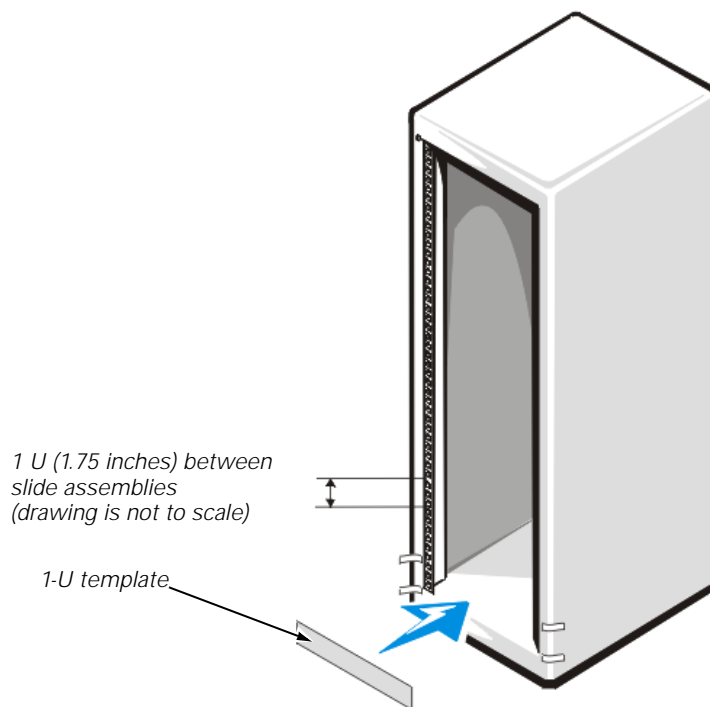


Figure 15. Using Template to Mark Vertical Rails

3. At the front of the rack cabinet, position one of the slide assemblies so that its mounting-bracket flange fits between the marks or tape you placed on the rack, marking the upper and lower edges of the template (see Figure 16). The hooks on the bottom of the mounting bracket should enter the holes beside the lower marks you made in the vertical rails.
4. Secure the front of the mounting-bracket flange with a 10-32 x 0.5-inch pan-head Phillips screw in the front vertical rail (see Figure 16).
5. Push back on the back mounting-bracket flange until the mounting hook locks into the matching square hole on the back vertical rail.
6. Repeat steps 3 through 5 for the remaining slide assembly on the other side of the rack.

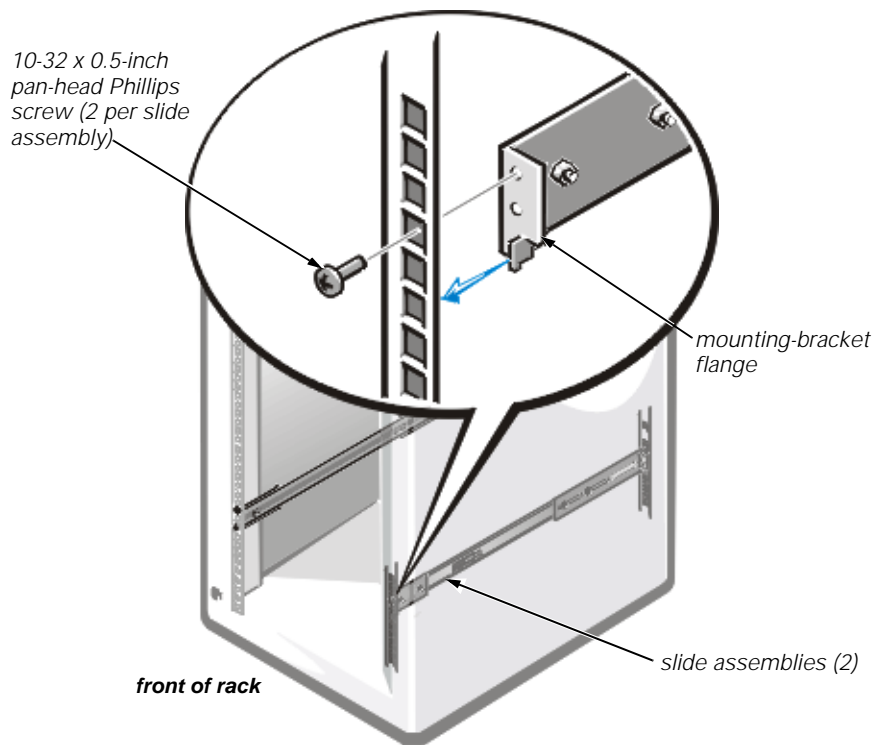


Figure 16. Installing the Slide Assemblies

Installing the Inner Rails on the System Chassis

To install the inner rails to the sides of the system, perform the following steps.



CAUTION: The computer may weigh up to 15.8 kilograms (35 pounds) when fully loaded. To prevent personal injury, do not attempt to move the computer by yourself.

1. Place the computer on its side (see Figure 17) on a piece of foam or cardboard (to prevent damage to the computer) while you install the inner rails to the sides of the system.

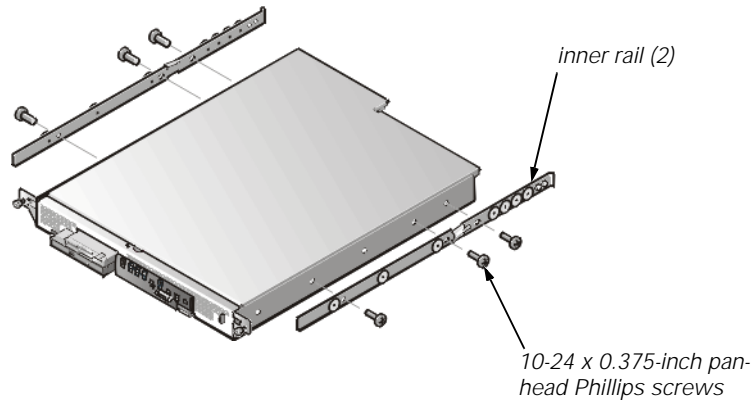


Figure 17. Installing the Inner Rails

2. Secure each inner rail to the side of the chassis with three 10-24 x 0.375-inch pan-head Phillips screws (see Figure 17).

Installing the System in the Rack



WARNING: If you are installing more than one computer, install the first computer in the lowest available position in the rack.



WARNING: Never pull more than one component out of the rack at a time.



CAUTION: Because of the size and weight of the computer, never attempt to install the computer in the slide assemblies by yourself.

1. Pull the two interior slide assemblies out of the rack until they lock in the extended position.

2. Lift the computer into position in front of the extended slides.

Grasp the system with one hand on the right side of the computer and the other hand on the left side of the computer.

3. Align the inner rails you installed on the sides of the system with the open portion of the slide assemblies (see Figure 18).
4. Push the computer into the slide assemblies until the system stops (see Figure 18).

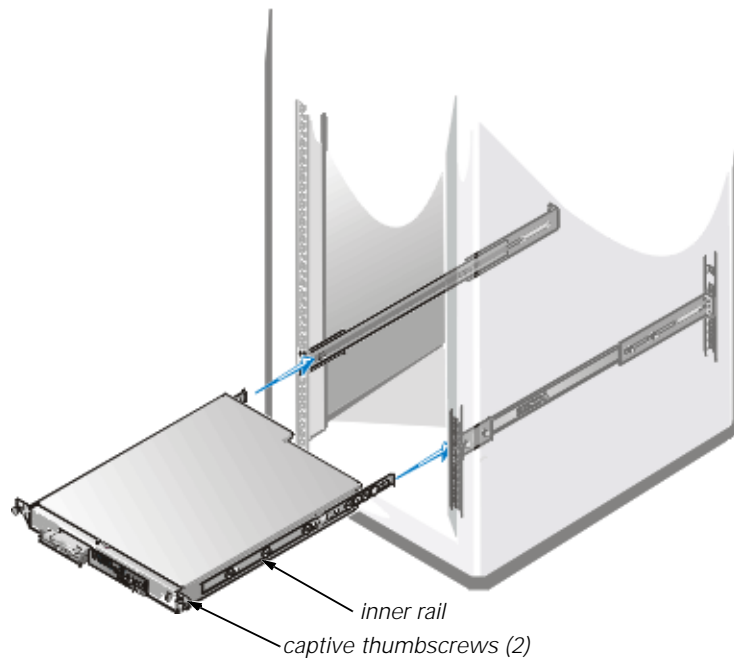


Figure 18. Installing the Computer in the Rack

5. Press in on the release latch on each extended slide and push the chassis into the rack.
6. Tighten the captive thumbscrews on each side of the front chassis panel to secure the system to the rack.

Installing the Cable-Management Arm

To install the cable-management arm on the back of the computer, perform the following steps:

1. Facing the back of the rack cabinet, locate the threaded hole on the back of the slide assembly and secure the end of the cable-management arm (the end having a bracket and captive thumbscrew) to the right side vertical rail (see Figure 19).

The bracket snaps into the square mounting holes on the vertical rail and is secured with a captive thumbscrew.

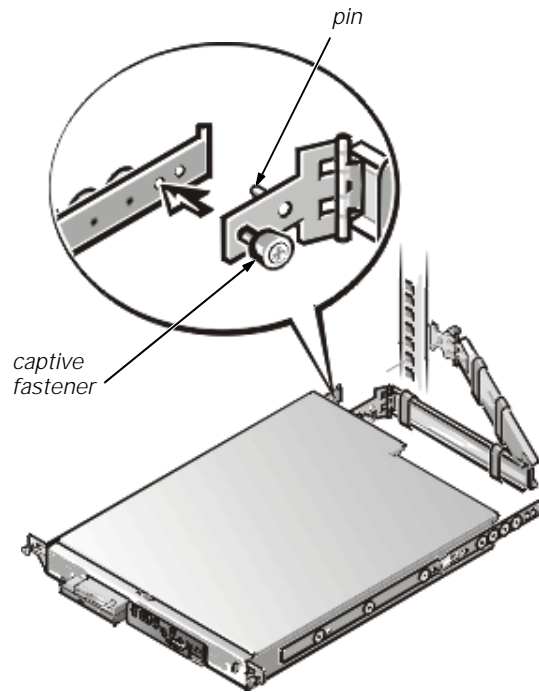


Figure 19. Installing the Cable-Management Arm

2. Align the free end of the cable-management arm (the end with the pin and captive thumbscrew) to the back end of the right (or left) side inner rail (as viewed from the back) of the computer.
3. Secure the cable-management arm to the inner rail with the captive thumbscrew (see Figure 19).
4. Attach the input/output (I/O) cables to their respective expansion cards on the back of the PowerApp system.
5. Connect the remaining cables to the computer.

For details, see your system's *Troubleshooting Guide* and the *User's Guide*.

6. Secure the cables to the cable-management arm:
 - a. After connecting the cables to the computer, unscrew the thumbscrews that secure the front of the server to the front vertical rail.
 - b. Slide the system forward to the fully extended position.
 - c. Route the cables along the cable-management arm, allowing some additional cable slack at the hinge positions, and secure the cables to the cable-management arm with the Velcro straps attached to the cable-management arm.

7. Slide the computer in and out of the rack to verify that the cables are routed correctly and do not bind, stretch, or pinch with the movement of the cable-management arm.



NOTE: As you pull the computer out to its furthest extension, the slide assemblies will lock in the extended position. To push the computer back into the rack, press the locking latch on the side of the slide to release the locks, and then slide the computer completely into the rack.

Replacing the Rack Doors

The following subsections describe procedures for replacing the rack doors on the 42-U rack and the 24-U rack.

Replacing the Rack Doors on a 42-U Rack



CAUTION: To prevent personal injury due to the size and weight of the doors, never attempt to remove or replace the doors by yourself.

1. Lift the front door into position and align the hinges with the holes in the rack as shown in Figure 11.
2. Slide the hinges into the holes in the rack until the hinge release levers lock the hinges into position.
3. Close the door latch by rotating the handle counterclockwise until it stops, push in the handle until it locks in position, and then slide the button cover down over the push button (see Figure 10).
4. Repeat steps 1 through 3 to install the back door.

Replacing the Rack Doors on a 24-U Rack



CAUTION: To prevent personal injury due to the size and weight of the doors, never attempt to remove or replace the doors by yourself.

1. Lift the front door into position and align the hinges with the holes in the rack (see Figure 13).
2. Line up the door hinges and then press them down.
3. Close the door latch by rotating the handle counterclockwise until it stops, and then push the handle in until it locks in position (see Figure 12).
4. Repeat steps 1 through 3 to install the back door.

This completes the four-post rack kit installation.